SIMON FRASER UNIVERSITY S.83-111

MEMORANDUM

To: SENATE	From: J. M. WEBSTER, DEAN OF GRADUATE STUDIES
Subject: PROPOSED GRADUATE CURRICULUM CHANGES - MATHEMATICS	Date: NOVEMBER 17, 1983

Action undertaken by the Senate Committee on Graduate Studies at its meeting of November 14, 1983, gives rise to the following motion:-

MOTION:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.83-111, the proposed changes in Mathematics including the following:-

i) New course proposals -

MATH 825-4	Enumeration	
MATH 826-4	Posets and Matroids	
MATH 827-4	Discrete Mathematics: Selected Topics	

ii) Change of numbers -

MATH 822-4	Topology I	to MATH 839-4
MATH 823-4	Topology II	to MATH 840-4
MATH 824-4	Topology: Selected Topics	to MATH 841-4"

J.M. Webster
Dean of Graduate Studies

SIMON FRASER UNIVERSITY

MEMORANDUM

H. Evans	From P. Dobud
Secretary to Senate	Administrative Assistant to the Dean of Science
Subject RECOMMENDATIONS TO SCGS	Date October 25, 1983

The following items, described in the enclosed documentation, have been approved by the Faculty of Science. Could you please arrange to have them placed on the Agenda of the next Senate Committee on Graduate Studies Committee meeting?

NEW MATHEMATICS COURSES

"That the proposal for the following new Mathematics graduate courses be approved (paper F-83-9)."

MATH 825-4 Enumeration
MATH 826-4 Posets and Matroids
MATH 827-4 Discrete Mathematics: Selected Topics

CHANGE OF NUMBER OF GRADUATE COURSES IN MATHEMATICS

"That the proposal to change the number of the following graduate courses in the Mathematics Program be approved (paper F-83-9)."

FROM	MATH 822-4 Topology I
TO	MATH 839-4 Topology I
FROM	MATH 823-4 Topology II
TO	MATH 840-4 Topology II
FROM	MATH 824-4 Topology: Selected Topics
TO	MATH 841-4 Topology: Selected Topics

/mgj
Encls./

P. Dobud

cc: D. Sutton, Chairman
Faculty of Science
Graduate Studies Committee

SIMON FRASER UNIVERSITY

F-83-9

MEMORANDUM

To.....Dr. J. Cochran..... .....Dean of Science.....	From.....Dr. B.S. Thomson, Chairman Graduate Program Committee .....Mathematics Department.....
Subject.....NEW COURSE PROPOSALS Math 825, 826 & 827	Date.....August 12, 1983.....

The Mathematics Department wishes to add to the graduate calendar three new courses in the area of Discrete Mathematics. We currently list only two courses in this area (Math 820-4, Graph Theory, Math 821-4, Combinatorics) although we have responded to the students additional needs with reading courses and selected topics courses.

The Discrete Mathematics group (Alspach/Brown/Godsil/Hell/Heinrich) that is operating in our department has a reputation in this field in North America second only to the Group at the University of Waterloo. They have hosted numerous special meetings, they invite many distinguished visiting faculty, and they are beginning to attract quality graduate students. To support their growth and to maintain their reputation we need to formalize our offerings and make the graduate calendar better reflect the true extent of activity in the Discrete Mathematics area.

For these reasons we propose three new courses (Math 825, 826, 827 described in the attached material). The first two of these represent important areas of mathematics that can not be touched upon in any of our current listings, and the third course is a selected topics course which is merely a notational change from the usual "Pure Mathematics" Selected Topics course (Math 800-4).

Our intention is to offer these courses on a two year cycle. The effect will be to increase the variety of courses for students who are specializing in this area, but with no increase in the total number of courses mounted. There are no budgetary implications that arise as the research group here together with the visitors that it now regularly attracts are more than adequate for our teaching needs.

To ensure a pleasing presentation in the calendar we have decided to re-number our 3 graduate Topology courses. The details are indicated on the course proposal forms attached.

Brian Thomson

BST/sh
Encl.

AUG 16 1983

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: MATHEMATICS Course Number: 825-4

Title: ENUMERATION

Description: Enumeration problems concerned with permutations, sequences, partitions lattice walks and graphs, algebraic and analytic properties of generating functions, asymptotic analysis.

Credit Hours: 4 Vector: Prerequisite(s) if any:

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 When will the course first be offered: FALL 84 ~~F0~~

How often will the course be offered: Once per two years.

JUSTIFICATION:

Enumeration problems are important in both pure and applied mathemtics.

Presently these can only be superficially studied in Math 821.

RESOURCES:

Which Faculty member will normally teach the course: Alspach/Brown/Godsil/Hell

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: for B S Thomson Date: 15.08.83

Faculty Graduate Studies Committee: [signature] Date: 15 Sept-

Faculty: [signature] Date: OCT 24 1983

Senate Graduate Studies Committee: [signature] Date: 16/11/83

Senate: Date:

PROPOSED COURSE IN: ENUMERATION

(a) Outline: This course would be an introduction to the important classes of enumeration problems and the methods used to attack them.

These problems arise in connection with permutations, sequences, partitions, lattice walks and graphs. Methods used include: constructing combinatorial conferences, manipulation of generating functions, permanents and MacMahon's Master Theorem, formal language theory.

Some emphasis would be placed on computation of exact and asymptotic values of the coefficients of generating functions and also on applications of enumeration theory to such areas as distribution-free statistics, statistical physics and computer science.

(b) Prof's Alspach, Brown, Godsil and Hell are all competent to teach a graduate course in this area. Godsil has a number of papers studying generating functions arising in graph theory.

(c) Current library facilities are adequate.

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: MATHEMATICS **Course Number:** 826-4

Title: Posets and Matroids

Description: An introduction to the theory of posets, geometric lattices and matroids

Credit Hours: 4 **Vector:** _____ **Prerequisite(s) if any:** _____

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 **When will the course first be offered:** SPRING 85 ~~86~~

How often will the course be offered: Once per two years.

JUSTIFICATION:

Posets and matroids form an important part of discrete mathematics which can currently only be covered at the expense of the standard material (designs, finite geometry), if at all.

RESOURCES:

Which Faculty member will normally teach the course: Atspach/Godsil/Hell/Heinrich

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: [signature] Date: 15.08.83

Faculty Graduate Studies Committee: [signature] Date: 15 Sept

Faculty: [signature] Date: OCT 24 1983

Senate Graduate Studies Committee: [signature] Date: 16/11/83

Senate: _____ Date: _____

PROPOSED COURSE ON: POSETS AND MATROIDS

(a) An introduction to ordered combinatorial structures. Material to be covered chosen from:

(a) basic results in finite lattice theory (structure of distributive and geometric lattices

(b) theory of Möbius inversion, posets and topology

(c) Sperner theory of posets

(d) linear extensions of posets

(e) matroid theory and its applications

(b) Prof's Alspach, Godsil, Heinrich and Hell are all competent to teach this course. Hell has published several papers in matroid theory.

(c) Current library facilities are adequate.

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 827-4

Title: Discrete Mathematics: Selected Topics

Description:

Credit Hours: 4 Vector: Prerequisite(s) if any: -

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 5 When will the course first be offered: Fall 84

How often will the course be offered: As required

JUSTIFICATION:

We are having an increasing number of experts in Discrete Mathematics visiting us; with this course available they can offer a graduate course on their specialities.

RESOURCES:

Which Faculty member will normally teach the course: Visitors and Faculty

What are the budgetary implications of mounting the course: -

Are there sufficient Library resources (append details): Yes (nothing extra needed).

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: for D.P. Thurston Date: 15.08.83

Faculty Graduate Studies Committee: Date: 15 Sept

Faculty: Date: OCT 24 1983

Senate Graduate Studies Committee: Date: 16/11/83

Senate: Date:

This is a special topics course, to be given by visiting discrete mathematicians on areas in which they have special knowledge.

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 839-4

Title: Topology I

Description: Please note that we are only changing the number from Math 822-4 to Math 839-4 - course content is still the same.

Credit Hours: 4 Vector: Prerequisite(s) if any:

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: When will the course first be offered:

How often will the course be offered:

JUSTIFICATION:

RESOURCES:

Which Faculty member will normally teach the course:

What are the budgetary implications of mounting the course:

Are there sufficient Library resources (append details):

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: Date: 15.08.83

Faculty Graduate Studies Committee: Date: 15 Sept

Faculty: Date: OCT 24 1983

Senate Graduate Studies Committee: Date: 16/11/83

Senate: Date:

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 840-4

Title: Topology II

Description: Please note that we are only changing the number from Math 823-4 to Math 840-4 - course content is still the same.

Credit Hours: 4 Vector: Prerequisite(s) if any:

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: When will the course first be offered:

How often will the course be offered:

JUSTIFICATION:

RESOURCES:

Which Faculty member will normally teach the course:

What are the budgetary implications of mounting the course:

Are there sufficient Library resources (append details):

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: Date: 15.08.83

Faculty Graduate Studies Committee: Date: 15 Sept

Faculty: Date: OCT 24 1983

Senate Graduate Studies Committee: Date: 16/11/83

Senate: Date:

SIMON FRASER UNIVERSITY

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics Course Number: 841-4

Title: Topology: Selected Topics

Description: Please note that we are only changing the number from Math 824-4 to Math 841-4 - course content is still the same.

Credit Hours: 4 Vector: Prerequisite(s) if any:

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: When will the course first be offered:

How often will the course be offered:

JUSTIFICATION:

RESOURCES:

Which Faculty member will normally teach the course:

What are the budgetary implications of mounting the course:

Are there sufficient Library resources (append details):

Appended: a) Outline of the Course
b) An indication of the competence of the Faculty member to give the course.
c) Library resources

Approved: Departmental Graduate Studies Committee: Date: 15.08.83

Faculty Graduate Studies Committee: Date: 15 Sept

Faculty: Date: OCT 24 1983

Senate Graduate Studies Committee: Date: 16/11/83

Senate: Date: